

## BANDWIDTH RESERVATION REUSE IN DYNAMICALLY ALLOCATED RING PROTECTION AND RESTORATION TECHNIQUE

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### ABSTRACT OF THE DISCLOSURE

The disclosed network includes two rings, wherein a first ring transmits data in a clockwise direction, and the other ring transmits data in a counterclockwise direction. The traffic is removed from the ring by the destination node. During normal operations (i.e., all spans operational), data between nodes can flow on either ring. Thus, both rings are fully utilized during normal operations. The nodes periodically test the bit error rate of the links (or the error rate is constantly calculated) to detect a fault in one of the links. The detection of such a fault sends a broadcast signal to all nodes to reconfigure a routing table within the node so as to identify the optimum routing of source traffic to the destination node after the fault. Since the available links will now see more data traffic due to the failed link, traffic designated as “unprotected” traffic is given lower priority and may be dropped or delayed in favor of the “protected” traffic. In addition, special considerations are made at provisioning to guarantee the required bandwidth under the new source routed traffic configuration. Specific techniques are described for guaranteeing bandwidth availability for working and single failure traffic configurations, identifying a failed link, communicating the failed link to the other nodes, differentiating between protected and unprotected classes of traffic, and updating the routing tables.